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Open Financial Exchange
Bill Presentment

June 12, 1997

Review Copy

This is a *Review Copy* of the Bill Presentment chapter of the Open Financial Exchange specification. This chapter is still under development. DO NOT use this draft as the basis for implementation.

Contents

15. Bill Presentment

15.1 Overview

Bill Presentment (PRES) is the electronic delivery of a bill from a biller to a customer.

Although some billers may provide Bill Presentment service themselves, many will choose to work with a bill publisher that provides Bill Presentment service on behalf of many billers. For this reason, Bill Presentment focuses on connecting customers to bill publishers.

15.1.1 Bill Presentment Model

This section summarizes the process of receiving bills electronically, starting with the steps required to find a bill publisher and set up Bill Presentment service.

To receive bills electronically, the client:

1. Finds one or more billers by searching a biller directory server.

2. Determines which bill publishers provide Bill Presentment service for the billers.

3. Enrolls with a bill publisher for Bill Presentment service

4. Signs on with the bill publisher and activates Bill Presentment service for one or more accounts with one or more billers.

5. Requests electronic bills from the bill publisher.

6. (Optionally) Pays bills using the Open Financial Exchange Bill Payment service.

15.1.2 Servers and Message Sets

During the billing process, the client typically communicates with two Open Financial Exchange servers:

- *Biller directory server:* An independent server that stores information about billers and bill publishers. Clients can query this server to find the bill publishers that serve the billers in which the customer is interested.

- *Bill publisher server:* The server that delivers bills to customers. A single bill publisher can provide Bill Presentment service for many billers. In some cases, a biller might act as its own bill publisher.

Although it is possible for a single server to perform both of the functions listed above, it is more likely that independent directory servers will provide clients with a single source for finding billers. To allow these functions to be routed separately by clients, Bill Presentment defines separate message sets for directory query and bill delivery.

- Biller Directory message set (PRESDIRMSGSETV1)

- Bill Delivery message set (PRESDLVMSGSETV1)

For additional information about the message sets defined for Bill Presentment, see section 15.7.

15.2 Biller Directory

To find billers, the client sends a <FINDBILLERRQ> request to the biller directory server. The biller directory server returns a <FINDBILLERRS> response.

<FINDBILLERRQ> and <FINDBILLERRS> are part of the Biller Directory message set (PRESDIRMSGSETV1). The message set tags are <PRESDIRMSGSRQV1> and <PRESDIRMSGSRSV1>.

15.2.1 Client Signon to the Biller Directory Server

Because the client does not enroll with the biller directory server, the client sends a standard signon request with dummy values for the user ID and password. Only the basic client identification will be valid. For more information about signon requests, refer to Chapter 2 of the Open Financial Exchange specification.

15.2.2 Search Arguments

If the client omits all elements in the <FINDBILLERRQ>, the client is requesting a complete directory of billers. Otherwise, the client wants to filter results based on the included elements, with strings matched case-insensitive using regular expressions[1] (for example, '*' is interpreted as a wildcard).

For each biller that matches the elements in the request, the biller directory server returns the complete name and address of the biller, plus the biller ID and bill publisher name.

15.2.3 Identification of Bill Publishers

Bill Publishers must be uniquely and consistently identified by name. Clients need some way to relate the bill publisher name given by a directory server to their own databases of known and approved bill publishers. Since the number of bill publishers is relatively small, and the number of directory servers that must be coordinated even smaller, the official corporate name of a bill publisher will serve as an ID for that publisher.

15.2.4 Find Biller Request <FINDBILLERRQ>

The <FINDBILLERRQ> request must appear within a <FINDBILLERTRNRQ> transaction wrapper.

Clients that want to receive an updated list of billers and bill publishers can use <DTUPDATE> to avoid receiving a response if nothing has changed. <DTUPDATE> is returned by servers in responses to indicate the date and time of the newest or most recently changed entry, whether or not it was included in the response. Clients performing narrow searches cannot use <DTUPDATE> unless they save the value for each query, and send the corresponding value in future requests.

The name and address fields refer to the biller, except for <CONSUPOSTALCODE> which refers to the customer's address.

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[1] A regular expression as described by POSIX, a standard developed by IEEE.

Tag	Description
<FINDBILLERRQ>	
<DTUPDATE>	Date and time of last change to any biller entry as reported by the server on previous query, *datetime.*
<NAME>	Biller's name, regular expression supported, *A-32*
<ADDR1>	Biller's address line 1, regular expression supported, *A-32*
<ADDR2>	Biller's address line 2, regular expression supported, *A-32*
<ADDR3>	Biller's address line 3, regular expression supported, *A-32*
<CITY>	Biller's city, regular expression supported, *A-32*
<STATE>	Biller's state, regular expression supported, *A-5*
<POSTALCODE>	Biller's postal code, regular expression supported, *A-11*
<COUNTRY>	ISO/DIS-3166 3-letter country code standard, *A-3*
<SIC>	Standard Industry Code, *N-6*
<CONSUPOSTALCODE>	Postal code of customer, to allow server to filter out billers that do not do business in the customer's area, *A-11*
<INCIMAGES>	Y if the client wants images (logos) returned, *Boolean*
</FINDBILLERRQ>	

15.2.5 Find Biller Response <FINDBILLERRS>

<FINDBILLERRS> must appear within a <FINDBILLERTRNRS> transaction wrapper.

The response is a list of <BILLERINFO> aggregates.

Tag	Description
<FINDBILLERRS>	
<DTUPDATE>	Date and time of last addition or modification to the entries in the directory, whether part of this response or not, *datetime*
<BILLERINFO>	Zero or more <BILLERINFO> aggregates
</BILLERINFO>	
</FINDBILLERRS>	

15.2.5.1 Biller Information <BILLERINFO>

<BILLERINFO> includes information about a single biller.

Besides basic name and address information, <BILLERINFO> includes the <BILLPUB> and <BILLERID> elements. These elements will be used with the customer's account number to identify the customer's account with the biller. For more information about the account-identification aggregates, refer to <PRESACCTFROM> and <PRESACCTTO> in section 15.3.2.2.

<BILLERINFO> can optionally include elements that specify the format of valid account numbers. <ACCTFORMAT> and <ACCTEDITMASK> provide information to the client. <HELPMESSAGE> provides a text message that the client can display to the customer.

To avoid the complications caused by invalid account numbers, <BILLERINFO> can also include a <VALIDATE>*URL* element that the client application can use to validate the customer's account number.

Tag	Description
<BILLERINFO>	
<BILLPUB>	Official standard name of the bill publisher, *A-32*
<BILLERID>	ID of this biller at this bill publisher, *A-12*
<NAME>	Name of the biller, *A-32*
<ADDR1>	Biller's address line 1, *A-32*
<ADDR2>	Biller's address line 2, *A-32*
<ADDR3>	Biller's address line 3, *A-32*
<CITY>	Biller's city, *A-32*
<STATE>	Biller's state, *A-5*
<POSTALCODE>	Biller's postal code, *A-11*
<COUNTRY>	Biller's country; 3-letter country code from ISO/DIS-3166, *A-3*
<SIC>	Standard Industry Code, *N-6*
<PHONE>	Biller's phone number for customer information (if a special number exists for electronic billing information, use that number), *A-32*
<PAYMENTINSTRUMENTS>	Types of payment that the biller can accept electronically, see section 15.3.5.1
</PAYMENTINSTRUMENTS>	
<ACCTFORMAT>	Regular expression describing the account number format, *A-255*
<ACCTEDITMASK>	String describing the edit mask for the account number. The client can use the edit mask to assist the user in entering the account number, *A-255*
<HELPMESSAGE>	Human-readable message that the client can display to assist the customer in entering his or her account number, *A-255*
<RESTRICT>	Human-readable description of any restrictions on who may sign up with this biller. *A-255*
<LOGO>	URL of the biller's logo. If the client requested images, the logo should be included via multi-part MIME in this response. *URL*
<VALIDATE>	URL for validation. The client application may use this to validate the customer's account number. *URL*
<BILLERINFOURL>	URL of human-readable description of additional information the biller would like the customer to have with regard to signing up. *URL*
</BILLERINFO>	

15.2.6 Status Codes <FINDBILLERTRNRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)

15.3 Customer Signup

Once the customer has located a biller and its associated bill publisher, the customer must enroll with the bill publisher for Bill Presentment service and activate accounts for one or more billers at that bill publisher.

Bill Presentment uses the standard Open Financial Exchange Signup message set. This section discusses only those portions of signup that differ for Bill Presentment. For more information about the Signup message set, refer to Chapter 8 of the Open Financial Exchange specification.

15.3.1 Enrollment

To enroll with a bill publisher, the client uses the standard Open Financial Exchange enrollment aggregate (<ENROLLRQ>). The bill publisher server returns an <ENROLLRS> that provides status about the enrollment and optionally returns a user ID and password to be used during subsequent signons.

To allow a client proxy system to enroll multiple clients, Bill Presentment allows multiple <ENROLLRQ> requests in the same Open Financial Exchange file, each wrapped in a <ENROLLTRNRQ>. A given bill publisher may not need some required fields in the <ENROLLRQ>; in such a case, the client proxy system can include dummy data.

15.3.2 Account Inquiry

To receive account information from a bill publisher, the client can use the standard Open Financial Exchange <ACCTINFORQ> aggregate, contained in the <ACCTINFOTRNRQ> wrapper.

The <ACCTINFORS> response returns a <PRESACCTINFO> aggregate for each of the customer's accounts with the billers at that bill publisher. Typically, the response will list only those accounts that have been activated for Bill Presentment service, not all available accounts.

Unlike a financial institution, bill publishers generally won't have information about all the accounts of its supported billers. Billers that act as their own bill publishers may be able return available accounts as well as activated accounts. The bill publisher can use the <AVAILACCTS> element in the profile for the Signup message set to indicate whether the server can return available account information.

If the server cannot return information about all available accounts, the client must ask customers for account information prior to requesting service activation for one or more accounts.

15.3.2.1 Bill Presentment Account Information <PRESACCTINFO>

The <PRESACCTINFO> aggregate appears within the <ACCTINFORS> aggregate.

Tag	Description
<PRESACCTINFO>	Opening tag for bill presentment account information
<PRESACCTFROM>	Bill presentment account identification, see section 15.3.2.2
</PRESACCTFROM>	
<SVCSTATUS>	Status of the Bill Presentment service for this account– AVAIL, PEND, ACTIVE, or REJECTED
<REASON>	Relevant only if REJECTED, *A-255*
</PRESACCTINFO>	Closing tag for bill presentment account information

15.3.2.2 Account Identification <PRESACCTFROM> <PRESACCTTO>

The <PRESACCTFROM> aggregate uniquely identifies a customer's account with a biller by the combination of bill publisher, biller ID, and account number. Biller IDs must be unique within a bill publisher.

Tag	Description
<PRESACCTFROM>	
<BILLPUB>	Official standard name of bill publisher, *A-32*
<BILLERID>	ID of this biller at this bill publisher, *A-12*
<ACCTID>	Account number, *A-32*
<PRESNAMEADDRESS>	Customer's name and address, see section 15.3.2.2.1
</PRESNAMEADDRESS>	
<USERID>	Customer's user ID, *A-32*
</PRESACCTFROM>	

<PRESACCTTO> follows the same structure as <PRESACCTFROM>.

15.3.2.2.1 Customer Information <PRESNAMEADDRESS>

Tag	Description
<PRESNAMEADDRESS>	Customer name and address information
<NAME>	Customer's name, *A-32*
<ADDR1>	Customer's address line 1, *A-32*
<ADDR2>	Customer's address line 2, *A-32*
<ADDR3>	Customer's address line 3, *A-32*
<CITY>	Customer's city, *A-32*
<STATE>	Customer's state, *A-5*
<POSTALCODE>	Customer's postal code, *A-11*
<COUNTRY>	Customer's country; 3-letter country code from ISO/DIS-3166, *A-3*
<PHONE>	Customer's telephone number, *A-32*
</PRESNAMEADDRESS>	

15.3.3 S rvice Activation

Bill Presentment uses the standard service activation messages defined in Chapter 8 of the Open Financial Exchange specification.

The account service request aggregate <ACCTRQ> accepts action-specific aggregates for service additions, changes, and deletions. To add Bill Presentment service to an account, the client sends an <ACCTRQ> with an <SVCADD> for the service <SVC>PRESSVC.

15.3.3.1 Service Addition <SVCADD>

Bill Presentment defines a variant of the service addition aggregate <SVCADD>. This variant contains the <PRESACCTTO> aggregate and <PREAUTHTOKEN> element.

The <PRESACCTTO> aggregate identifies the customer's name and address <PRESNAMEADDRESS>, as it is registered at the biller. Clients are REQUIRED to include the <PRESNAMEADDRESS> aggregate in the <PRESACCTTO> aggregate when they send an <ACCTRQ>.

The <PRESACCTTO> aggregate also identifies the requester's user ID <USERID>. Clients can optionally include a <USERID> that is different from the one used in the <SONRQ>. This <USERID> supports account activation by a third party on behalf of a user. It is up to the server whether to honor such a request, based on access rights granted to the <SONRQ> user. More than one <SVCADD>, on behalf of multiple <USERID>s, can be present in a single <OFX> file.

In some cases, the biller might provide the customer with information out-of-band to expedite service activation. For instance, the biller might provide a confirmation number on the customer's printed statement. The client can provide this additional information through the <PREAUTHTOKEN> element.

Tag	Description
<SVCADD>	Opening tag for the service addition
<PRESACCTTO>	Account for which Bill Presentment service should be added. See section 15.3.2.2
</PRESACCTTO>	
<PREAUTHTOKEN>	A token provided out-of-band by biller to speed up activation of the account, A-32
</SVCADD>	

15.3.4 Service Status Update for Groups of Customers

The service activation requested with <SVCADD> will often not happen immediately. In this case, a request for account information <ACCTINFORQ> will return an <ACCTINFORS> with a <SVCSTATUS> value of PEND. To find out whether the account has been activated, the client can either send <ACCTINFORQ> once per session until it returns <SVCSTATUS>ACTIVE, or it can include an <ACCTSYNRQ> in each session to catch an unsolicited <ACCTRS> response to the <SVCADD> message.

This section describes a method of checking for status changes on behalf of a group of customers. This method is designed to be used by customer service representatives and client proxy systems.

15.3.4.1 Account Information Request <ACCTINFORQ>

The client uses <ACCTINFORQ> to request information about accounts whose status has changed since the last time the request was made. This request is typically used to retrieve a list of accounts whose status has changed from <SVCSTATUS>PEND to <SVCSTATUS>ACTIVE.

The <ACCTINFORQ> request must appear within a <PRESGRPACCTINFOTRNRQ> transaction wrapper. The transaction wrapper indicates whether the request is for a single user or a group of users.

Tag	Description
<ACCTINFORQ>	Opening tag for billing account information request
<DTACCTUP>	Last <DTACCTUP> received in a response, datetime
</ACCTINFORQ>	Closing tag for billing account information request ·

15.3.4.2 Account Information Response <ACCTINFORS>

The <ACCTINFORS> aggregate contains zero or more <ACCTINFO> aggregates, which provide the updated account information.

The <ACCTINFORS> response must appear within a <PRESGRPACCTINFOTRNRS> transaction wrapper

Tag	Description
<ACCTINFORS>	Opening tag for billing account information response
<DTACCTUP>	Date and time of last update to account information on the server, datetime
<ACCTINFO>	Zero or more account information aggregates, see section 8.5.3. The <ACCTINFO> aggregate contains zero or more <PRESACCTINFO> aggregates.
</ACCTINFO>	
</ACCTINFORS>	Closing tag for billing account information response

15.3.4.3 Group Account Information Transaction Request <PRESGRPACCTINFOTRNRQ>

As a special transaction wrapper for <ACCTINFORQ>, <PRESGRPACCTINFOTRNRQ> specifies whether the client is requesting account information for a single user or a group of users.

If the client specifies <USERID>, the client is requesting updated account information for a single user. If the user's account information has changed since the last time the client requested it, the server will return the account information in <ACCTINFORS>

If the client specifies <GROUPID>, the client is requesting updated account information for a group of users. The server returns an <ACCTINFORS> response with a <PRESACCTINFO> aggregate for each account whose status has changed.

The client should specify either <USERID> or <GROUPID>; if both are absent, the server uses the <USERID> from the signon request <SONRQ>.

Tag	Description
<PRESGRPACCTINFOTRNRQ>	Opening tag for the transaction request
<TRNUID>	Client-assigned globally unique ID for this transaction, trnuid
<CLTCOOKIE>	Data to be echoed in the transaction response, A-32
<TAN>	Transaction authorization number, A-80
<USERID>	Requests account information for the specified user, A-32
- or -	
<GROUPID>	Requests account information for users in the group, A-32

```
<ACCTINFORQ>

</ACCTINFORQ>

</PRESGRPACCTINFOTRNRQ>      Closing tag for the transaction request
```

15.3.4.4 Group Account Information Transaction Response <PRESGRPACCTINFOTRNRS>

As a special transaction wrapper for <ACCTINFORS>, <PRESGRPACCTINFOTRNRS> contains an <ACCTINFORS> aggregate with zero or more <PRESACCTINFO> aggregates. The <ACCTINFORS> aggregate returns one <PRESACCTINFO> aggregate for each account for which there was a change of status since the <DTSTART> date specified.

The server includes information for only those user IDs for which the requester has access rights.

Tag	Description
<PRESGRPACCTINFOTRNRS>	Opening tag for the transaction response
<TRNUID>	Client-assigned globally unique ID for this transaction, *trnuid*
<STATUS>	
</STATUS>	
<CLTCOOKIE>	Data to be echoed in the transaction response, *A-32*
<ACCTINFORS>	Account information response aggregate
</ACCTINFORS>	
</PRESGRPACCTINFOTRNRS>	Closing tag for the transaction response

15.3.4.5 Status Codes <PRESGRPACCTINFOTRNRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)
2002	Other account/group error (ERROR)
2006	Account/group not found (ERROR)
2008	Account/group not authorized (ERROR)

15.3.5 Bill r Payment Restrictions

In the <PAYMENTINSTRUMENTS> aggregate of <BILLERINFO> aggregate (see section 15.2.5.1), the biller specifies the type of payment instruments it can accept for electronic payment. Since electronic payment does not have to occur through the Open Financial Exchange Bill Payment message set, the payment instruments can include some that Open Financial Exchange doesn't support—for example, CyberCash.

In some cases, a biller may have arranged for a certain party to act as its payment concentrator. This means that the biller expects to receive good funds and remit advice in a pre-arranged format from these concentrators. Such a biller will want to have customers direct their payments to the payment concentrator.

The <PAYMENTINSTRUMENTS> aggregate supports the specification of a payment concentrator from which the biller wants to receive funds. However, Open Financial Exchange currently does not provide a way for clients to get information about payment concentrators. Knowledge of payment concentrators will have to be "hardwired" into client applications. For example, the client application may know that a certain payment concentrator, BigConcentrator, is capable of receiving DigiCash funds. A biller who has BigConcentrator as its payment concentrator can then accept DigiCash funds from the customer without having to support the DigiCash protocol and infrastructure directly. The application would direct the DigiCash funds to the concentrator, who would in turn transfer funds and remit advice to the biller using the agreed-upon method.

> *NOTE: Billers in certain regulated industries are required to accept paper checks as payment—that is to say, a draft on the payer's checking account. These billers must be prepared to accept non-electronic payment for bills.*

15.3.5.1 Payment Instruments <PAYMENTINSTRUMENTS>

In the <PAYMENTINSTRUMENTS> aggregate, billers list which payment instruments they accept.

Tag	Description
<PAYMENTINSTRUMENTS>	Opening tag for payment instruments
<PAYMENTINSTRUMENT>	One or more payment instrument aggregates, see section 15.3.5.2
</PAYMENTINSTRUMENT >	
</PAYMENTINSTRUMENTS>	Closing tag for payment instruments

15.3.5.2 Payment Type and Brand <PAYMENTINSTRUMENT>

Each payment instrument is described by <TYPE> and <BRAND>. If the server does not specify <BRAND>, the client assumes that all brands of the given <TYPE> are acceptable.

Tag	Description
<PAYMENTINSTRUMENT>	Opening tag for payment instrument aggregate
<TYPE>	Payment type, see section 15.3.5.3
<BRAND>	Accepted brand for given payment type, A-32
</PAYMENTINSTRUMENT>	Closing tag for payment instrument aggregate

15.3.5.3 Payment Instrument Types <TYPE>

TYPE	Description
Concentrator	Party with which the biller has a business relationship and who will send the biller good funds and remit advice
CheckingAccount	Draft on a demand deposit account (US)
CreditCard	Payment by Auth/Settle using Credit Card networks
ECoin	Protocol for payment with electronic cash

If the <BILLERINFO> does not list <PAYMENTINSTRUMENTS>, the following single <PAYMENTINSTRUMENT> is implied:

```
<PAYMENTINSTRUMENT>
   <TYPE>CheckingAccount
</PAYMENTINSTRUMENT>
```

15.4 Bill Delivery

The Bill Delivery message set contains messages to obtain bills. The message set <PRESDLVMSGSETV1> contains the following tags: <PRESDLVMSGSRQV1> and <PRESDLVMSGSRSV1>.

15.4.1 Bill Delivery Process

Typically, the client periodically requests a list of bills from the bill publisher. The bill publisher responds with a list of bills, each of which contains summary data such as the due date and amount due. For each bill, the bill publisher might also return a URL to a Web site that contains an HTML-rendered version of the bill. Depending on the client's request, the server might also return structured bill detail for a given bill.

The aggregate for a bill list request is <PRESLISTRQ>. This request must be wrapped inside <PRESLISTTRNRQ>. There is no synchronization wrapper for bill list requests, since clients that require a list of bills can send another <PRESLISTRQ>.

The transaction wrapper <PRESLISTTRNRQ> contains optional elements that allow bills for one or more customers to be accessed by customer service representatives or client proxy systems. It is up to the server to decide who can access bills other than their own; it is recommended that all such access be logged in an audit trail.

15.4.2 Bill List Retrieval

<PRESLISTRQ> retrieves bills from the bill publisher. The bill publisher returns a <PRESLISTRS> response that contains a list of one or more bills.

15.4.2.1 Bill List Request <PRESLISTRQ>

The client requests bills from a bill publisher by date range. To specify the date range, clients use <DTSTART> and <DTEND>, as described in section 3.2.7. The request doesn't specify an individual biller; it covers all the billers whose bills are published by the specified bill publisher.

The bill publisher returns information sufficient to identify the biller and provide the amount due, due date, and remittance information so that a payment can be made to the biller. The bill publisher does not provide a viewable form of the bill, but returns a URL to an HTML rendering of the bill. Billing detail, such as individual purchases or transactions, can be included in the original response or obtained from a subsequent <PRESDETAILRQ>.

The <PRESLISTRQ> must be wrapped in the <PRESLISTTRNRQ> transaction wrapper.

Tag	Description
<PRESLISTRQ>	Opening tag for bill list request
<BILLPUB>	Official standard name of bill publisher, *A-32*
<DTSTART>	If present, indicates earliest date for which to include bills, *datetime*
<DTEND>	If present, indicates latest date for which to include bills, *datetime*
<NOTIFYWILLING>	Flag indicating that client is prepared to send notifications of bill delivery, if desired (see section 15.4.5), *Boolean*
<INCLUDEDETAIL>	Flag indicating bill detail should be included too, *Boolean*
</PRESLISTRQ>	Closing tag for bill list request

15.4.2.2 Bill List Response <PRESLISTRS>

The <PRESLISTRS> response must appear within a <PRESLISTTRNRS> transaction wrapper.

The <PRESLISTRS> response scan contain zero or more bill summaries, with optional detail. Each bill summary corresponds to a (usually monthly) bill.

Tag	Description
<PRESLISTRS>	Opening tag for bill list response
<BILLPUB>	Official standard name of bill publisher, A-32
<USERID>	User whose bill data is being returned, A-32
<DTSTART>	Start date of bills returned, datetime
<DTEND>	Date to present as start date for next request, datetime
<PRESLIST>	Opening tag for bill summary list
</PRESLIST>	
</PRESLISTRS>	Closing tag for bill list response

15.4.2.2.1 Bill List <PRESLIST>

The bill list aggregate <PRESLIST> contains a list of zero or more <PRESBILLINFO> aggregates.

Tag	Description
<PRESLIST>	Opening tag for bill list
<PRESBILLINFO>	Bill information aggregate (zero or more)
</PRESBILLINFO>	
</PRESLIST>	Closing tag for bill list

15.4.2.2.2 Bill Information <PRESBILLINFO>

The bill information aggregate <PRESBILLINFO> provides information about a single bill, including the amount due, date due, and pointers to more information.

If the client requested bill detail in the <PRESLISTRQ>, the bill publisher provides the detail in zero or more <PRESDETAILRS> aggregates. If the client did not request bill detail, the server should use the <DETAILAVAILABLE> flag to indicate whether the client can request bill detail at a later time using the <PRESDETAILRQ> aggregate.

The bill date <DTBILL> is usually a fixed number of days after the end of the bill period. It is not the date on which the bill publisher received the bill for publication.

Tag	Description
<PRESBILLINFO>	Opening tag for bill information
<FITID>	Identifier for this bill, *FITID*
<PRESACCTFROM>	Biller account information (see section 15.3.2.2)
</PRESACCTFROM>	
<PAYEEID>	Payee identifier. Specify only if the bill publisher is also provides Bill Payment service. See section 15.5. *A-12*
<REMITTOKEN>	Biller-defined text to include with the payment, for the biller's Accounts Receivable reconciliation. See section 15.5. *A-255*
<AMTDUE>	Full payment amount due, *amount*
<MINAMTDUE>	Minimum payment amount due, *amount*
<DTPMTDUE>	Payment due date, *datetime*
<DTBILL>	Bill date, *datetime*
<DTOPEN>	Opening statement date, *datetime*
<DTCLOSE>	Closing statement date, *datetime*
<PREVBAL>	Balance of the account as of the previous period, *amount*
<AMTPAID>	Net payments received and credited to the account since the last period, *amount*
<BAL>	Balance of the account prior to the bill being sent, *amount*
<NOTIFYDESIRED>	Indicator that a delivery notification (see section 15.4.5) is desired, *Boolean*
<STMNTIMAGE>	Statement image aggregate, see section 15.4.2.2.3
</STMNTIMAGE>	
<DETAILAVAILABLE>	Indicator that structured detail is available, *Boolean*
-or-	
<PRESDETAIL>	Zero or more bill details, when requested, see section 15.4.3.2
</PRESDETAIL>	
</PRESBILLINFO>	Closing tag for bill information

If <PREVBAL>, <AMTPAID>, and <BAL> are all present, then <BAL> and <AMTPAID> must add up to <PREVBAL>.

15.4.2.2.3 Statement Image <STMNTIMAGE>

The <STMNTIMAGE> aggregate provides one or more URLs that point to a fully rendered image of the bill, in HTML.

<IMAGEURL> accesses the complete bill image. This URL may contain navigation to other sites, or to other pages of bill images at the same site.

To support off-line viewing of the bill, the server may provide one or more additional URLs. Each <PREFECTCHURL> points to a local Web page.

Each URL associated with <IMAGEURL> and <PREFETCHURL> must include an authentication token at the end (for example, ?authtoken=*randomString*). These embedded tokens guarantee that only the customer can access the Web page. Accessing the statement image requires SSL. The bill publisher might include an expiration date for the authentication token, and hence for the URLs. The expiration date could be quite short (for example, 1 hour) or quite long (for example, 1 month). After the expiration date, the client can obtain a new authentication token only by sending a new <PRESLISTRQ> request.

Tag	Description
<STMNTIMAGE>	Opening tag for statement image
<IMAGEURL>	URL address for retrieving an image of the complete bill encoded as HTML. This can be cached by the client for later display, or it can be viewed live directly from the Web. *url*
<PREFETCHURL>	Advice in support of off-line viewing. Zero or more. *url*
<DTEXPIRE >	Date after which embedded authentication token expires, *datetime*
</STMNTIMAGE>	Closing tag for statement image

15.4.2.3 Bill List Transaction Request <PRESLISTTRNRQ>

As the transaction wrapper for <PRESLISTRQ>, this aggregate specifies whether the client is requesting bills for a single user or a group of users. The optional <USERID> and <GROUPID> elements support the following scenarios:

- **A customer requests his or her own bills from the bill publisher:** In this case, the client can optionally specify the customer's <USERID> in the <PRESLISTTRNRQ>. If the client does not specify <USERID>, the bill publisher uses the <USERID> in the signon request <SONRQ>.

- **A customer service representative requests a bill on behalf of a user:** The client sends the representative's <USERID> in the signon request <SONRQ>. To specify the user for which the representative is retrieving bills, the client sends the customer's <USERID> in the <PRESLISTTRNRQ>. The bill publisher must ultimately decide whether the customer service representative can access the requested bills. In its response, the bill publisher includes only those bills for which the requester has access privileges.

- **A client proxy system fetches bills on behalf of a group of users:** Instead of sending a <USERID>, the client sends the <GROUPID> that identifies the group of users. Within the <PRESLISTTRNRS>, the bill publisher returns a <PRESLISTRS> for each user in the named group. Again, the bill publisher decides whether access should be granted. Bill publishers that support usage of the <GROUPID> must maintain knowledge of which users are in which named group. The Open Financial Exchange specification does not provide a way to track membership in a named group. Any such management must happen out-of-band.

Tag	Description
<PRESLISTTRNRQ>	Opening tag for bill list transaction request
<TRNUID>	Client-assigned globally unique ID for this transaction, *trnuid*
<CLTCOOKIE>	Data to be echoed in the transaction response, *A-32*
<TAN>	Transaction authorization number, *A-80*
<USERID>	If present, the bill request is on behalf of this particular user, *A-32*
- or -	
<GROUPID>	If present, the bill request is on behalf of all users in the named group. If both <USERID> and <GROUPID> are absent, the <USERID> in the <SONRQ> is implied. *A-32*
<PRESLISTRQ>	Bill List Request Aggregate
</PRESLISTRQ>	
</PRESLISTTRNRQ>	Closing tag for bill list transaction request

15.4.2.4 Bill List Transaction Response <PRESLISTTRNRS>

The transaction response returns zero or more bills <PRESLISTRS>.

Tag	Description
<PRESLISTTRNRS>	Opening tag for bill list transaction response
<TRNUID>	Client-assigned globally unique ID for this transaction *trnuid*
<STATUS>	Status aggregate
</STATUS>	
<CLTCOOKIE>	Client provided data. **REQUIRED** if provided in request *A-32*
<PRESLISTRS>	Bill list response aggregate, zero or more
</PRESLISTRS>	
</PRESLISTTRNRS>	Closing tag for bill list transaction response

15.4.2.5 Status Codes <PRESLISTTRNRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)
2002	General account error (ERROR)
2003	Account/Group not found (ERROR)
2004	Account/Group closed (ERROR)
2005	Account/Group not authorized (ERROR)

15.4.3 Bill D tail Retrieval

If statement detail is available for a bill, the client can retrieve the detail using a bill detail request (<PRESDETAILRQ). One example of statement detail is the individual telephone calls from a telephone bill.

15.4.3.1 Bill Detail Request <PRESDETAILRQ>

The <PRESDETAILRQ> request must appear within a <PRESDETAILTRNRQ> transaction wrapper.

Tag	Description
<PRESDETAILRQ>	Opening tag for bill detail request
<FITID>	Statement identifier from <BILLINFO>, *fitid*
<TABLETYPE>	If present, filters response to just tables of this type. See table 15.4.3.2.3
</PRESDETAILRQ>	Closing tag for bill detail request

15.4.3.2 Bill Detail Response <PRESDETAILRS>

The <PRESDETAILRS> request must appear within a <PRESDETAILTRNRS> transaction wrapper.

The bill detail response contains zero or more <TABLE> aggregates.

Tag	Description
<PRESDETAILRS>	Opening tag for bill detail response
<PRESDETAIL>	Opening tag for bill detail aggregate
<FITID>	Statement identifier from <BILLINFO>, *fitid*
<PRESACCTFROM>	Identifies biller account. Must be included if in response to an <PRESDETAILRQ>, is redundant inside <PRESBILLINFO>
</PRESACCTFROM>	
<TABLE>	Zero or more bill detail table aggregates. See section 15.4.3.2.1.
</TABLE>	
</PRESDETAIL>	Closing tag for bill detail aggregate
</PRESDETAILRS>	Closing tag for bill detail response

15.4.3.2.1 Bill Detail Table <TABLE>

The bill detail table allows billers to send tabular data to the customer in a flexible way. The table might contain phone calls from a telephone bill, or electrical meter readings for a utility bill.

A table consists of one or more rows, each having one or more columns. Within a table, all rows must have identical structures. The <TABLETYPE> determines the "shape" or schema of the table. The <TABLENAME> gives a name to this table, and should be unique within an <PRESDETAILRS>.

Tag	Description
\<TABLE\>	Opening tag for bill detail table
\<TABLENAME\>	Name of bill detail table, *A-32*
\<TABLETYPE\>	Type of bill detail table, see section 15.4.3.2.3
\<ROW\>	Zero or more bill detail row aggregates, see section 15.4.3.2.2
\</ROW\>	
\</TABLE\>	Closing tag for bill detail table

15.4.3.2.2 Bill Detail Row \<ROW\>

A \<TABLE\> contains zero or more bill detail rows \<ROW\>.

A \<ROW\> contains zero or more columns \<C\>, whose meanings are specific to the type of table \<TABLETYPE\> in which they occur. For the purpose of the DTD parser, all columns \<C\> are consider to be **Format: A-255**.

Bill publishers can return blank columns. Additionally, bill publishers can omit blank columns at the end of a \<ROW\>, tag and all.

Tag	Description
\<ROW\>	Opening tag for bill detail row
\<C\>	Zero or more column data elements, *A-255*
\</ROW\>	Closing tag for bill detail row

15.4.3.2.3 Table Types \<TABLETYPE\>

Open Financial Exchange defines some common table types. Individual billers can define their own table types, and hence their own table structures, but must honor the custom tag naming convention outlined in section 2.7 of the Open Financial Exchange specification.

Value	Description
TransactionList	Table defined for "payment register"-style line items
CallLog	Table defined for record of telephone calls
XXX.Usage	Table defined by biller, not by Open Financial Exchange

15.4.3.2.3.1 TransactionList Table Type

\<TABLE\> aggregates marked with \<TABLETYPE\>TransactionList have rows of 14 columns. The first column contains a unique identifier (like an FITID), and must be present. Other columns may not always apply and can be left blank.

The TransactionList table type is a subset of the \<STMTRN\> aggregate in section 11.4.2.3.1.

Column	Name	Description
1	FitId	Unique identifier token from server, *fitid*
2	TrnType	Transaction type (see section 11.4.2.3.1.1)
3	DtPosted	Date item was posted, *datetime*
4	DtUser	Date user initiated transaction, if known, *datetime*
5	TrnAmount	Amount of transaction, *amount*
6	CorrectFitId	If present, unique identifier of previously sent transaction that is corrected by this record, *fitid*
7	CorrectAction	Replace or delete. Specify only if column 6 is present.
8	CheckNum	Check or other reference number, *A-12*
9	RefNum	Other reference number, *A-12*
10	SIC	Standard Industrial Code, *N-6*
11	Name	Name of payee or description of transaction, *A-32*
12	Memo	Extra Information, *A-255*
13	OrigCurSym	Original Currency Identifier (ISO 42173 3-letter), *A-3*
14	CurRate	Currency rate, ratio of currency to original currency, *rate*

15.4.3.2.3.2 CallLog Table Type

<TABLE> aggregates marked with <TABLETYPE>CallLog have rows of 10 columns.

Column	Name	Description
1	TNCalledFrom	Telephone number called from, *A-32*
2	CityStateFrom	City, state (or place, region) called from, *A-16*
3	TNCalled	Telephone number called, *A-32*
4	CityState	City, state (or place, region) called, *A-16*
5	Originated	Date/time call started, *datetime*
6	Type	Type of call, *A-8*
7	Rate	Rate (for example, Night, Day, Eve, Wknd), *A-5*
8	Duration	Duration of call in tenths of seconds, *N-6*
9	Cost	Cost of call, *amount*
10	TNChargedTo	Telephone number charged to, *A-32*

15.4.3.3 Status Codes <PRESDETAILTRNRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)
2003	FITID not found (ERROR)
2005	Table type not found (ERROR)

15.4.4 Tabl Structure Definition

Clients can obtain the definition of a table structure by sending a table structure request <TBLSTRUCTRQ>.

Clients need only request the structure of tables it does not already know about. For instance, the client might request the structure of a biller-specific table that starts with the x- prefix. Knowing the structure of a table allows the client to display the data more clearly or store the data in a more compact form, such as a database table.

15.4.4.1 Table Structure Request <TBLSTRUCTRQ>

To identify the table, the client includes the type of table <TABLETYPE> and unique identifier <FITID> for the table. Although <TABLETYPE> uniquely identifies the table, Open Financial Exchange requires the <FITID> as well to allow various server implementations.

The <TBLSTRUCTRQ> request must appear within a <TBLSTRUCTTRNRQ> transaction wrapper.

Tag	Description
<TBLSTRUCTRQ>	Opening tag for the table structure request
<FITID>	Statement Identifier, *fitid*
<TABLETYPE>	Table type for which the structure is requested
</TBLSTRUCTRQ>	Closing tag for the table structure request

15.4.4.2 Table Structure Response <TBLSTRUCTRS>

The <TBLSTRUCTRS> response must appear within a <TBLSTRUCTTRNRS> transaction wrapper.

The table structure response contains one or more column type definitions, which correspond positionally with the <C> aggregates in a <ROW> in a <TABLE> of the corresponding <TABLETYPE>.

Tag	Description
<TBLSTRUCTRS>	Opening tag for table structure response
<FITID>	Table identifier, *fitid*
<TABLETYPE>	Table type
<COLDEF>	Zero or more column definition aggregates (see section 15.4.4.2.1)
</COLDEF>	
</TBLSTRUCTRS>	Closing tag for table structure response

15.4.4.2.1 Column Definition <COLDEF>

A column definition <COLDEF> associates a name and a data type with a column.

Tag	Description
<COLDEF>	Opening tag for column definition
<COLNAME>	Column name, A-32
<COLTYPE>	Column type, in A-255/D/N-6 notation, A-8
</COLDEF>	Closing tag for column definition

15.4.4.3 Status Codes <TBLSTRUCTRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)
2003	FITID not found (ERROR)
2005	Table type not found (ERROR)

15.4.5 Delivery Notification

The bill publisher can request delivery notification through the <NOTIFYDESIRED> flag in the <PRESBILLINFO> aggregate (see section 15.4.2.2.2). The bill publisher will expect to receive the delivery notification only if the <PRESLISTRQ> had the <NOTIFYWILLING> flag set.

The delivery notification request tells the bill publisher that the client has presented the specified bills to the customer. This is a stronger statement than acknowledging that the bills have been received by the client, specifically when the client software implements the pre-fetching or (push) model.

However, Open Financial Exchange does not define the meaning of "presenting to the customer." In particular, receipt of a delivery notification by the bill publisher has no legal significance. Open Financial Exchange also does not define the maximum elapsed time between the presentation of the bill and the delivery notification.

15.4.5.1 Delivery Notification Request <PRESNOTIFYRQ>

The <PRESNOTIFYRQ> request must appear within a <PRESNOTIFYTRNRQ> transaction wrapper.

Tag	Description
<PRESNOTIFYRQ>	Opening tag for delivery notification request
<PRESDELIVERYID>	Zero or more bill delivery ID aggregates (see section 15.4.5.1.1)
</PRESDELIVERYID>	
</PRESNOTIFYRQ>	Closing tag for delivery notification Request

15.4.5.1.1 Bill Delivery Identification <PRESDELIVERYID>

This aggregate identifies a bill delivery instance and suggests when the bill was "seen."

<DTSEEN> is the date and time at which the client displayed the bill to the customer. There is no legal significance to this bill delivery identification.

Tag	Description
<PRESDELIVERYID>	Opening tag for the bill delivery identification
<PRESACCTFROM>	Biller account information
</PRESACCTFROM>	
<FITID>	Identifies the bill from the given biller, *fitid*
<DTSEEN>	Date and time at which the bill was made available to the requester's client, *datetime*
</PRESDELIVERYID>	Closing tag for the bill delivery identification

15.4.5.2 Delivery Notification Response <PRESNOTIFYRS>

The <PRESNOTIFYRS> response must appear within a <PRESNOTIFYTRNRS> transaction wrapper.

The delivery notification response lets the client know that the delivery notification request was received by the bill publisher.

Tag	Description
<PRESNOTIFYRS>	Opening tag for Delivery Notification Response
<PRESDELIVERYID>	Zero or more bill delivery ID aggregates
</PRESDELIVERYID>	
</PRESNOTIFYRS>	Closing tag for Delivery Notification Response

15.4.5.3 Status Codes <PRESNOTIFYTRNRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)
2005	FITID not found (ERROR)

15.5 Bill Payment

To pay a bill received through a <PRESLISTRQ> request, the client can use the Bill Payment message set defined in Chapter 12. To construct the payment information <PMTINFO> (see section 12.5.2), the client can use the bill information from <PRESBILLINFO>.

15.5.1 Remittance Information

The client should include the <REMITTOKEN> from the <PRESBILLINFO> aggregate as the <BILLREFINFO> in the <PMTINFO> aggregate. This token allows the biller to link the payment with the bill.

15.5.2 Payee Identification

Client software can produce <PAYEEID> or <PAYEE> in one of two ways.

If the Bill Presentment and Bill Payment are provided by the same company, the client can use the <PAYEEID> included in the <PRESBILLINFO> aggregate.

If the Bill Payment provider is a different company, the client must use information from the <PRESACCTINFO> to construct the <PAYEE> information. The client can then retrieve the <PAYEEID> from the payment response.

15.6 Bill Presentment E-Mail

Open Financial Exchange currently defines a Bill Presentment e-mail message that clients can send to bill publishers. With this message, a customer can send a message to a bill publisher regarding one of his or her accounts.

The server acknowledges receipt of the message. The bill publisher then prepares a response that the client picks up when it synchronizes with the server. E-mail is subject to synchronization, using <PRESMAILSYNCRQ> and <PRESMAILSYNCRS>.

Client Sends	Server Responds
Addressed message	
PRES account information	
	Acknowledgment
.	
.	
.	
Synchronization request	
	Response to customer

15.6.1 Bill Pr sentment Mail Request <PRESMAILRQ>

The client must identify the account to which account the customer query is related.

The <PRESMAILRQ> request must appear with a <PRESMAILTRNRQ> transaction wrapper.

Tag	Description
<PRESMAILRQ>	PRES-e-mail-request aggregate
<PRESACCTFROM>	Account-from aggregate
</PRESACCTFROM>	
<MAIL>	To, from, message information, see section 9.2.2
</MAIL>	
</PRESMAILRQ>	

15.6.2 Bill Presentment Mail Response <PRESMAILRS>

The <PRESMAILRQ> request must appear with a <PRESMAILTRNRQ> transaction wrapper.

Tag	Description
<PRESMAILRS>	PRES-e-mail-response aggregate
<PRESACCTFROM>	Account-from aggregate
</PRESACCTFROM>	
<MAIL>	To, from, message information, see section 9.2.2
</MAIL>	
</PRESMAILRS>	

15.6.3 Status Codes <PRESMAILTRNRS>

Code	Meaning
0	Success (INFO)
2000	General error (ERROR)
2002	General account error (ERROR)
2003	Account not found (ERROR)
2004	Account closed (ERROR)
2005	Account not authorized (ERROR)
2019	Duplicate transaction (ERROR)
16500	HTML not allowed (ERROR)
16501	Unknown mail To: (ERROR)

15.7 Message Sets and Profile

Open Financial Exchange separates the messages that the client and server send into groups called message sets. In its profile response <PROFRS>, each bill publisher or other server provider defines the message sets that it supports and any options available for those message sets.

This section defines the message sets supported by Bill Presentment. It then describes the corresponding message set profile aggregates that can be provided in the profile response <PROFRS>. The message set profile aggregates for the <PROFRS> allow a bill publisher or other server provider to customize its use of Open Financial Exchange. For example, a server might support the Bill Delivery message set (<PRESDLVMSGSET>), but not the Group Account Information message set (<PRESACCTINFOMSGSETV1>).

For general information about profiles, see Chapter 7 of the Open Financial Exchange specification.

15.7.1 Message Sets and Messages

Bill Presentment defines the following message sets:

- Biller Directory message set (<PRESDIRMSGSET>), which includes messages for finding billers and bill publishers

- Bill Delivery message set (<PRESDLVMSGSET>), which includes messages for delivering bills and bill detail to customers

- Group Account Information message set (<PRESACCTINFOMSGSET>), which includes messages for getting account information for a group of users

15.7.1.1 Biller Directory Message Set and Messages

15.7.1.1.1 Biller Directory Request Messages

Message Set	Message
<PRESDIRMSGSET>	
<PRESDIRMSGSETV1>	
<PRESDIRMSGSRQV1>	FINDBILLERTRNRQ
	FINDBILLERRQ
</PRESDIRMSGSRQV1>	
</PRESDIRMSGSETV1>	
</PRESDIRMSGSET>	

15.7.1.1.2 Biller Directory Response Messages

Message Set	Message
<PRESDIRMSGSET>	
<PRESDIRMSGSETV1>	
<PRESDIRMSGSRSV1>	FINDBILLERTRNRS
	FINDBILLERRS
</PRESDIRMSGSRSV1>	
</PRESDIRMSGSETV1>	
</PRESDIRMSGSET>	

15.7.1.2 Bill Delivery Message Set and Messages

15.7.1.2.1 Bill Delivery Request Messages

Message Set	Message
<PRESDLVMSGSET>	
<PRESDLVMSGSETV1>	
<PRESDLVMSGSRQV1>	PRESLISTTRNRQ
	PRESLISTRQ
	PRESDETAILRQ
	PRESTABLESTRUCTRQ
	PRESNOTIFYRQ
</PRESDLVMSGSRQV1>	
</PRESDLVMSGSETV1>	
</PRESDLVMSGSET>	

15.7.1.2.2 Bill Delivery Response Messages

Message Set	Message
<PRESDLVMSGSET>	
<PRESDLVMSGSETV1>	
<PRESDLVMSGSRSV1>	PRESLISTTRNRS
	PRESLISTRS
	PRESDETAILRS
	PRESTABLESTRUCTRS
	PRESNOTIFYRS
</PRESDLVMSGSRSV1>	
</PRESDLVMSGSETV1>	
</PRESDLVMSGSET>	

15.7.1.3 Group Account Information Message Set and Messages

15.7.1.3.1 Group Account Information Request Messages

Message Set	Message
\<PRESACCTINFOMSGSET>	
\<PRESACCTINFOMSGSETV1>	
\<PRESACCTINFOMSGSRQV1>	PRESGRPACCTINFOTRNRQ
	PRESACCTINFORQ
\</PRESACCTINFOMSGSRQV1>	
\</PRESACCTINFOMSGSETV1>	
\</PRESACCTINFOMSGSET>	

15.7.1.3.2 Group Account Information Response Messages

Message Set	Message
\<PRESACCTINFOMSGSET>	
\<PRESACCTINFOMSGSETV1>	
\<PRESACCTINFOMSGSRSV1>	PRESGRPACCTINFOTRNRS
	PRESACCTINFORS
\</PRESACCTINFOMSGSRSV1>	
\</PRESACCTINFOMSGSETV1>	
\</PRESACCTINFOMSGSET>	

15.7.2 Biller Directory Message Set Profile

This section defines the profile aggregate for the Biller Directory message set. This profile aggregate should be included in the \<PROFRS> response for those servers that support the Biller Directory message set.

Message Set	Message
\<PRESDIRMSGSET>	Opening tag for the Biller Directory message set profile
\<PRESDIRMSGSETV1>	Version 1 of Biller Directory message set
\<MSGSETCORE>	Common message-set core
\</MSGSETCORE>	
\<PRESDIRPROF>	Directory profile (if supported)
\<PROCDAYSOFF>	Days of week that no processing occurs: MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, or SUNDAY. 0 or more \<PROCDAYSOFF> can be sent.
\<CANSUPPORTIMAGES>	Supports delivery of images as multi-part MIME, *Boolean*
\<PROCENDTM>	Time of day that day's processing ends, *time*
\</PRESDIRPROF>	
\</PRESDIRMSGSETV1>	
\</PRESDIRMSGSET>	Closing tag for the Biller Directory message set profile

15.7.3 Bill Delivery Message Set Profile

This section defines the profile aggregate for the Bill Delivery message set. This profile aggregate should be included in the <PROFRS> response for those servers that support the Bill Delivery message set.

Tag	Description
<PRESDLVMSGSET>	Opening tag for the Bill Delivery message set profile
<PRESDLVMSGSETV1>	Version 1 of Bill Delivery message set
<MSGSETCORE>	Common message-set core
</MSGSETCORE>	
<PRESDLVPROF>	Bill Delivery profile (if supported)
<PROCDAYSOFF>	Days of week that no processing occurs: MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, or SUNDAY. 0 or more <PROCDAYSOFF> can be sent.
<CANSUPPORTIMAGES>	Supports delivery of images as multi-part MIME, *Boolean*
<PROCENDTM>	Time of day that day's processing ends, *time*
</PRESDLVPROF>	
<EMAILPROF>	E-mail profile
<CANEMAIL>	Supports generalized e-mail, *Boolean*
<CANNOTIFY>	Supports notification (of any kind), *Boolean*
</EMAILPROF>	
</PRESDLVMSGSETV1>	
</PRESDLVMSGSET>	Closing tag for the Bill Delivery message set profile

15.7.4 Group Account Information Messag Set Profile

This section defines the profile aggregate for the Group Account Information message set. This profile aggregate should be included in the <PROFRS> response for those servers that support the Group Account Information message set.

Tag	Description
<PRESACCTINFOMSGSET>	Opening tag for Group Account Information message set profile
<PRESACCTINFOMSGSETV1>	Version 1 of Group Account Information message set
<MSGSETCORE>	Common message-set core
</MSGSETCORE>	
<PRESACCTINFOPROF>	Group Account Information profile (if supported)
<PROCDAYSOFF>	Days of week that no processing occurs: MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, SATURDAY, or SUNDAY. 0 or more <PROCDAYSOFF> can be sent.
<PROCENDTM>	Time of day that day's processing ends, *time*
</PRESACCTINFOPROF>	
</PRESDLVMSGSETV1>	
</PRESDLVMSGSET>	Closing tag for Group Account Information message set profile

15.8 Bill Presentment Examples

15.8.1 Find Biller Examples

15.8.1.1 Get All Billers

The client sends a <FINDBILLERRQ> request to retrieve all available billers:

```
<FINDBILLERRQ>              <!--Beginning of find biller request-->
    <INCIMAGES>N           <!--LOGO Images are not requested-->
</FINDBILLERRQ>            <!--End of request-->
```

To keep the size of the example reasonable, we will assume that there are only four billers. Here is the server reply.

```
<FINDBILLERRS>                       <!--Beginning of response-->
    <DTUPDATE>19960415092000         <!--Date last update 04/15/97 9:20am-->
    <BILLERINFO>
        <BILLPUB>Wepubbills          <!--Name of Bill Publisher-->
        <BILLERID>123456789          <!--Biller ID at Wepubbills-->
        <NAME>RealBig Credit Co.     <!--Name of biller-->
        <ADDR1>1324 Whatever St.     <!--Street address of biller-->
        <CITY>MajorMetro             <!--City of the Biller-->
        <STATE>OH                    <!--State of the biller-->
        <POSTALCODE>12345-1234       <!--Postal code of biller-->
        <COUNTRY>USA
        <SIC>23                      <!--Standard Industry Code of biller-->
        <PHONE>614-235-2323          <!--Biller's phone number-->
        <PAYMENTINSTRUMENTS>         <!--Type of payment accepted-->
            <PAYMENTINSTRUMENT>
```

```
        <TYPE>CheckingAccount
     </PAYMENTINSTRUMENT>
     <PAYMENTINSTRUMENT>
        <TYPE>Concentrator
        <BRAND>CityBank
     </PAYMENTINSTRUMENT>
   </PAYMENTINSTRUMENTS>
   <ACCTFORMAT>([0-9]\{3\}-)\{3\}    <!--Regular expression describing -->
                                     <!--biller's account number-->
   <ACCTEDITMASK>"    -    -    -   \\
                                     <!--Edit mask for account number-->
   <LOGO>http://www.realbig.com/logo.gif
                                     <!--URL to logo of biller-->
</BILLERINFO>
<BILLERINFO>
   <BILLPUB>Wepubbills              <!--Name of Bill Publisher-->
   <BILLERID>222334465              <!--Biller ID at Wepubbills-->
   <NAME>Aphone Company             <!--Name of biller-->
   <ADDR1>1324 Where Blvd           <!--Street address of biller-->
   <CITY>Sometown                   <!--City of the biller-->
   <STATE>CA                        <!--State of the biller-->
   <POSTALCODE>10992-1234           <!--Postal code of biller-->
   <COUNTRY>USA
   <SIC>39                          <!--Standard Industry Code of biller-->
   <PHONE>345-345-3489              <!--Biller's phone number-->
   <PAYMENTINSTRUMENTS>             <!--Type of payment accepted-->
      <PAYMENTINSTRUMENT>
         <TYPE>CheckingAccount
      </PAYMENTINSTRUMENT>
   </PAYMENTINSTRUMENTS>
   <ACCTFORMAT>([1-9]\{2\}-)\{2\}[0-9]\{3\}
                                     <!--Regular expression describing-->
                                     <!--biller's account number-->
   <ACCTEDITMASK>"    -    -   \\    <!--Edit mask for account number-->
   <LOGO>http://www.webup.com/aphone.gif
                                     <!--URL to logo of biller-->
</BILLERINFO>
<BILLERINFO>
   <BILLPUB>Wepubbills              <!--Name of Bill Publisher-->
   <BILLERID>98765123454            <!--Biller ID at Wepubbills-->
   <NAME>Goodol Mortgage            <!--Name of biller-->
   <ADDR1>8273 Magnolia St.         <!--Street address of biller-->
   <CITY>Atlanta                    <!--City of the Biller-->
   <STATE>GA                        <!--State of the biller-->
   <POSTALCODE>34342-6789           <!--Postal code of biller-->
   <COUNTRY>USA
   <SIC>03                          <!--Standard Industry Code of biller-->
   <PHONE>864-234-6745              <!--Biller's phone number-->
   <PAYMENTINSTRUMENTS>             <!--Type of payment accepted-->
      <PAYMENTINSTRUMENT>
         <TYPE>CheckingAccount
      </PAYMENTINSTRUMENT>
   </PAYMENTINSTRUMENTS>
   <ACCTFORMAT>[0-1]\{12\}          <!--Regular expression describing-->
                                     <!--biller's account number-->
   <HELPMESSAGE>Enter the first 13 digits of your account number
                                     <!--to help user key account number-->
   <RESTRICT> GA residents only.    <!--Indicate restricted availibility-->
   <LOGO>http://www.wepub.com/mort.gif
                                     <!--URL to logo of biller-->
</BILLERINFO>
<BILLERINFO>
   <BILLPUB>Wepubbills              <!--Name of Bill Publisher-->
```

```
    <BILLERID>32812816734              <!--Biller ID at Wepubbills-->
    <NAME>Sam's Widgets                 <!--Name of biller-->
    <ADDR1>Apt B3                       <!--Street address of biller-->
    <ADDR2>1267 Tank Rd
    <CITY>Columbus                      <!--City of Biller-->
    <STATE>OH                           <!--State of the biller-->
    <POSTALCODE>77723-8989              <!--Postal code of biller-->
    <COUNTRY>USA
    <SIC>12                             <!--Standard Industry Code of biller-->
    <PHONE>614-657-8934                 <!--Biller's phone number-->
    <PAYMENTINSTRUMENTS>                <!--Type of payment accepted-->
        <PAYMENTINSTRUMENT>
            <TYPE>CheckingAccount
        </PAYMENTINSTRUMENT>
        <PAYMENTINSTRUMENT>
            <TYPE>Concentrator
            <BRAND>BigConcentrator
        </PAYMENTINSTRUMENT>
    </PAYMENTINSTRUMENTS>
    <ACCTEDITMASK>"   -   - "           <!--Edit mask for account number-->
    <LOGO>http://www.relbig.com/logo.gif
                                        <!--URL to logo of biller-->
    <VALIDATE>http://www.wepub.com/sam.cgi
                                        <!--URL used to validate acct number-->
    </BILLERINFO>
</FINDBILLERRS>
```

15.8.1.2 Find Selected Billers

In this example, the client requests only those billers that are located in Ohio:

```
<FINDBILLERRQ>
    <STATE>OH
    <INCIMAGES>N
</FINDBILLERRQ>
```

In the same circumstances as before, the response would be:

```
<FINDBILLERRS>
    <DTUPDATE>19960415092000            <!--Date last update 04/15/97 9:20am-->
    <BILLERINFO>
        <BILLPUB>Wepubbills             <!--Name of Bill Publisher-->
        <BILLERID>123456789             <!--Biller ID at Wepubbills-->
        <NAME>RealBig Credit Co.        <!--Name of biller-->
        <ADDR1>1324 Whatever St.        <!--Street address of biller-->
        <CITY>MajorMetro                <!--City of the Biller-->
        <STATE>OH                       <!--State of the biller-->
        <POSTALCODE>12345-1234          <!--Postal code of biller-->
        <COUNTRY>USA
        <SIC>23                         <!--Standard Industry Code of biller-->
        <PHONE>614-235-2323             <!--Biller's phone number-->
        <PAYMENTINSTRUMENTS>            <!--Type of payment accepted-->
            <PAYMENTINSTRUMENT>
                <TYPE>CheckingAccount
            </PAYMENTINSTRUMENT>
            <PAYMENTINSTRUMENT>
                <TYPE>Concentrator
                <BRAND>CityBank
            </PAYMENTINSTRUMENT>
        </PAYMENTINSTRUMENTS>
        <ACCTFORMAT>([0-1]\{3\}-)\{3\}  <!--Regular expression describing-->
                                        <!--biller's account number-->
```

```
        <ACCTEDITMASK>"     -    -    -    "
                                                  <!--Edit mask for account number-->
        <LOGO>http://www.relbig.com/logo.gif
                                                  <!--URL to logo of biller-->
    </BILLERINFO>
</FINDBILLERRS>
```

15.8.2 Enrollment Examples

In this example, the client wants to enroll with a bill publisher.

15.8.2.1 Enrollment Request Example

```
<OFX>
    <SIGNONMSGSRQV1>                              <!--Signon Request-->
        <SONRQ>
            <DTCLIENT>19970307022243              <!--Timestamp, 3/07/97, 2:22:43am-->
            <USERID>D                             <!--Dummy userid-->
            <USERPASS>D                           <!--Dummy password-->
            <LANGUAGE>ENG
            <APPID>OFXAPP
            <APPVER>0201
        </SONRQ>
    </SIGNONMSGSRQV1>
    <SIGNUPMSGSRQV1>                              <!--Enrollment Request-->
        <ENROLLTRNRQ>
            <TRNUID>10001
            <ENROLLRQ>
                <FIRSTNAME>Cindy
                <MIDDLENAME>P
                <LASTNAME>Williams
                <ADDR1>123 Oak St
                <CITY>San Jose
                <STATE>CA
                <POSTALCODE>94111
                <COUNTRY>USA
                <DAYPHONE>415-555-0123
                <EVEPHONE>408-555-2323
                <EMAIL>cindy@aol.com
                <USERID>cindyid
                <TAXID>111-33-5555
                <SECURITYNAME>wynona
                <DATEBIRTH>19650402
            </ENROLLRQ>
        </ENROLLTRNRQ>
    </SIGNUPMSGSRQV1>
</OFX>
```

15.8.2.2 Enrollment Response Example

For this example, the server responds with immediate acceptance. In practice, many servers would send an enrollment status code of 13000 and send the user ID and password in a welcome letter.

```
<OFX>
    <SIGNONMSGSRSV1>                            <!--Signon response->
        <SONRS>
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <DTSERVER>19970307081437            <!--Timestamp, 3/07/97, 8:14:37am-->
            <LANGUAGE>ENG
            <DTPROFUP>19970301070000            <!--Timestamp, 3/01/97, 7:00:00am-->
            <DTACCTUP>19970301070000            <!--Timestamp, 3/01/97, 7:00:00am-->
        </SONRS>
    </SIGNONMSGSRSV1>
    <SIGNUPMSGSRSV1>                            <!--Enrollment response-->
        <ENROLLTRNRS>
            <TRNUID>10001
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <ENROLLRS>
                <TEMPPASS>y12345
                <USERID>cindyid
                <DTEXPIRE>19970407             <!--When Temp Password Expires-->
            </ENROLLRS>
        </ENROLLTRNRS>
    </SIGNUPMSGSRSV1>
</OFX>
```

15.8.3 Activation Example

After enrollment, Cindy wants to sign up with a biller, presumably found with the directory services, with biller ID 415-552-9923 of bill publisher Publisher, Inc.

15.8.3.1 Activation Request Example

```
<OFX>
    <SIGNONMSGSRQV1>                            <!--Signon Request-->
        <SONRQ>
            <DTCLIENT>19970308122243            <!--Timestamp, 3/08/97,12:22:43pm-->
            <USERID>cindyid                     <!--client's userid-->
            <USERPASS>y12345                    <!--client's temporary password-->
            <LANGUAGE>ENG
            <APPID>OFXAPP
            <APPVER>0201
        </SONRQ>
    </SIGNONMSGSRQV1>
    <SIGNUPMSGSRQV1>                            <!--Activation Request-->
        <ACCTTRNRQ>
            <TRNUID>10002
            <ACCTRQ>                            <!--Activate biller acct -->
                <SVCADD>
                    <PRESACCTTO>
                        <BILLPUB>Publisher, Inc.
                        <BILLER>415-552-9923
```

```
              <ACCTID>4128 9343 2324 2314
          <PRESNAMEADDRESS>
            <NAME>Cindy P Williams    <!--Name as on biller's statement-->
            <ADDR1>123 Oak St         <!--Address as on statement-->
            <CITY>San Jose
            <STATE>CA
            <POSTALCODE>94111
            <COUNTRY>USA
            <PHONE>408-555-2323
          </PRESNAMEADDRESS>
          <USERID>cindyid
        </PRESACCTTO>
      </SVCADD>
      <SVC>PRESSVC
    </ACCTRQ>
  </ACCTTRNRQ>
 </SIGNUPMSGSRQV1>
</OFX>
```

15.8.3.2 Activation Response Example

```
<OFX>
  <SIGNONMSGSRSV1>                        <!--Signon Response->
    <SONRS>
      <STATUS>
        <CODE>0
        <SEVERITY>INFO
      </STATUS>
      <DTSERVER>19970308181437            <!--Timestamp, 3/07/97, 6:14:37pm-->
      <LANGUAGE>ENG
      <DTPROFUP>19970301070000            <!--Timestamp, 3/01/97, 7:00:00am-->
      <DTACCTUP>19970301070000            <!--Timestamp, 3/01/97, 7:00:00am-->
    </SONRS>
  </SIGNONMSGSRSV1>
  <SIGNUPMSGSRSV1>                        <!--Enrollment Response-->
    <ACCTTRNRS>                           <!--Service Activation Response-->
      <TRNUID>10002
      <STATUS>
        <CODE>0
        <SEVERITY>INFO
      </STATUS>
      <ACCTRS>
        <SVCADD>
          <PRESACCTTO>
            <BILLPUB>Publisher, Inc.
            <BILLER>415-552-9923
            <ACCTID>4128 9343 2324 2314
           <PRESNAMEADDRESS>
            <NAME>Cindy P Williams
            <ADDR1>123 Oak St
            <CITY>San Jose
            <STATE>CA
            <POSTALCODE>94111
            <COUTNRY>USA
            <PHONE>408-555-2323
           </PRESNAMEADDRESS>
            <USERID>cindyid
          </PRESACCTTO>
        </SVCADD>
        <SVC>PRESSVC
      </ACCTRS>
    </ACCTTRNRS>
```

```
    </SIGNUPMSGSRSV1>
</OFX>
```

15.8.4 Bill Delivery Examples

15.8.4.1 Customer Bill Delivery Example

The customer, Dan North, wants to see his bills since 3/1/97, which is the last time he asked to see his bills.

15.8.4.1.1 Customer Bill Delivery Request Example

```
<OFX>
    <SIGNONMSGSRQV1>
        <SONRQ>
            <DTCLIENT>19970409090000        <!--Current date 4/9/1997-->
            <USERID>123-45-6789             <!--Dan North's user id-->
            <USERPASS>DansPassword
            <LANGUAGE>ENG
            <APPID>EndUserApp
            <APPVER>0700
        </SONRQ>
    </SIGNONMSGSRQV1>
    <PRESDLVMSGSRQV1>
        <PRESLISTTRNRQ>
            <TRNUID>12345
            <PRESLISTRQ>
                <BILLPUB> ABillPublisher
                <DTSTART>19970301000000      <!--Get Dan's bills since 3/1/97-->
                <INCLUDEDETAIL>Y
            </PRESLISTRQ>
        </PRESLISTTRNRQ>
    </PRESDLVMSGSRQV1>
</OFX>
```

15.8.4.1.2 Customer Bill Delivery Response Example

```
<OFX>
    <SIGNONMSGSRSV1>
        <SONRS>
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <DTSERVER>19970409001600
        </SONRS>
    </SIGNONMSGSRSV1>
    <PRESDLVMSGSRSV1>
        <PRESLISTTRNRS>
            <TRNUID>12345
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <PRESLISTRS>
                <BILLPUB>ABillPublisher
                <USERID>123-45-6789
                <DTSTART>19970301000000       <!--Same as in request: no data loss-->
                <DTEND>19970409090000         <!--Value for DTSTART next time-->
                <PRESLIST>
                    <PRESBILLINFO>
                        <FITID>65432
```

```
<PRESACCTFROM>
    <BILLPUB>ABillPublisher
    <BILLERID>1001          <!--Biller id for Power Inc-->
    <ACCTID>1245678GL7      <!--Dan North's acct with Power Inc-->
</PRESACCTFROM>
<REMITTOKEN>1234678GL7970501
<AMTDUE>124.24              <!--Dan North to pay $124.24-->
<DTPMTDUE>19970501          <!--by 5/1/97 -->
<DTBILL>19970401
<NOTIFYDESIRED>N
<STMNTIMAGE>
    <IMAGEURL>
https://www.Power.com/bills/apr/dannorth.htm?authtoken=65j3ltfm7
        <DTEXPIRE>199704101200
                            <!--Must visit url by 4/10/97 12am-->
</STMNTIMAGE>
<PRESDETAILRS>
    <FITID>65432            <!--This links detail to billinfo-->
    <TABLE>
        <TABLENAME>usage
        <TABLETYPE>x_Power_usage
                            <!--Power Inc format for usage-->
        <ROW>
            <C>elec         <!--Consumable-->
            <C>19970228     <!--Date meter reading start of period->
            <C>65543        <!--Meter reading at start of period-->
            <C>19970328     <!--Date meter reading end of period-->
            <C>65643        <!--Meter reading at end of period-->
            <C>100          <!--Difference in meter readings-->
            <C>KWH          <!--Units-->
            <C>.8934        <!--Rate (price per unit)-->
            <C>89.34        <!--Charge -->
        </ROW>
        <ROW>
            <C>gas          <!--Consumable -->
            <C>19970226     <!--Date meter reading start of period->
            <C>509843       <!--Meter reading at start of period -->
            <C>19970327     <!--Date meter reading end of period -->
            <C>510843       <!--Meter reading at end of period -->
            <C>1000         <!--Difference in meter readings -->
            <C>Therms       <!--Units -->
            <C>.02543       <!--Rate (price per unit) -->
            <C>25.43        <!--Charge -->
        </ROW>
    </TABLE>
    <TABLE>
        <TABLENAME>charges
        <TABLETYPE>x-Power-charges
        <ROW>
            <C>75.34        <!--Amount -->
            <C>Previous Balance 3/1/97
                            <!--Description -->
        </ROW>
        <ROW>
            <C>75.34
            <C>Payment Received 3/17/97 - Thank You!
        </ROW>
        <ROW>
            <C>0
            <C>Open Balance
        </ROW>
        <ROW>
            <C>114.77
```

```
                    <C>Services, Subtotal
                  </ROW>
                  <ROW>
                    <C>9.47
                    <C>Taxes, 8.25%
                  </ROW>
                </TABLE>
              </PRESDETAILRS>
            </PRESBILLINFO>
            <PRESBILLINFO>
              <FITID>65436
              <PRESACCTFROM>
                <BILLPUB>ABillPublisher
                <BILLERID>2021        <!--Biller id of FluteRental, Inc. -->
                <ACCTID>8765XY95      <!--Dan North's account number -->
              </PRESACCTFROM>
              <REMITTOKEN>8765XY95970428
              <AMTDUE>16.21           <!--Total to be paid -->
              <DTPMTDUE>19970428      <!--by 4/28/97 -->
              <DTBILL>19970408
              <NOTIFYDESIRED>N
              <STMNTIMAGE>
                <IMAGEURL> https://www.FluteRental.com/95rs3vlx/bill.asp
                <DTEXPIRE>19970601    <!--Must visit url by 6/1/97 -->
              </STMNTIMAGE>
              <DETAILAVAILABLE>N      <!--No structured detail exists -->
            </PRESBILLINFO>
          </PRESLIST>
        </PRESLISTRS>
      </PRESLISTTRNRS>
    </PRESDLVMSGSRSV1>
  </OFX>
```

15.8.4.2 Bill Delivery for Customer Service Representative

This example assumes that Dan North calls Power Inc with a question about his power bill. Power's customer service representative, Maria Smith, uses a similar application and a similar Open Financial Exchange request to see the same bill that Dan sees.

15.8.4.2.1 Bill Delivery Request Example for a Customer Service Representative

```
<OFX>
  <SIGNONMSGSRQV1>
    <SONRQ>
      <DTCLIENT>19970410100000
      <USERID>987-65-4321           <!--Maria Smith's user id -->
      <USERPASS>MariasPassword
      <LANGUAGE>ENG
      <APPID>CSRApp
      <APPVER>0500
    </SONRQ>
  </SIGNONMSGSRQV1>
  <PRESDLVMSGSRQV1>
    <PRESLISTTRNRQ>
      <TRNUID>23456
      <USERID>123-45-6789            <!--Asks for Dan North's bills -->
      <PRESLISTRQ>
        <BILLPUB> ABillPublisher
        <DTSTART>19970330            <!--Approximate date -->
        <DTEND>1997040410            <!--Approximate date -->
        <NOTIFYWILLING>N
```

```
            <INCLUDEDETAIL>Y
          </PRESLISTRQ>
        </PRESLISTTRNRQ>
    </PRESDLVMSGSRQV1>
</OFX>
```

15.8.4.2.2 Bill Delivery Response Example for a Customer Service Representative

The response from the server includes the Power Incorporated bill, but not the FluteRental bill. This is because the server decides that Maria Smith's credentials are good enough to see Dan North's Power Inc bill, but not good enough to see anything else.

```
<OFX>
    <SIGNONMSGSRSV1>
        <SONRS>
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <DTSERVER>19970410101300
        </SONRS>
    </SIGNONMSGSRSV1>
    <PRESDLVMSGSRSV1>
        <PRESLISTTRNRS>
            <TRNUID>23456
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <PRESLISTRS>
                <BILLPUB>ABillPublisher
                <USERID>123-45-6789         <!--Dan North's userid, so Dan's bill-->
                <DTSTART>19970328            <!--Same as in request: no data loss-->
                <DTEND>19970409             <!--Same as in request-->
                <PRESLIST>
                    <PRESBILLINFO>
                        <FITID>65432
                        <PRESACCTFROM>
                            <BILLPUB>ABillPublisher
                            <BILLERID>1001      <!--Biller id for Power Inc-->
                            <ACCTID>1245678GL7  <!--Dan's account with Power Inc-->
                        </PRESACCTFROM>
                        <REMITTOKEN>1234678GL7970501
                        <AMTDUE>124.24          <!--Dan to pay $124.24-->
                        <DTPMTDUE>19970501      <!--by 5/1/97 -->
                        <DTBILL>19970401
                        <NOTIFYDESIRED>N
                        <STMNTIMAGE>
                            <IMAGEURL>
https://www.Power.com/bills/apr/dannorth.htm?authtoken=987ab6gr8y
                            <DTEXPIRE>199704111200
                                                <!--Must visit url by 4/11/97 12am-->
                        </STMNTIMAGE>
                        <PRESDETAILRS>
                            <FITID>65432
                            <TABLE>
                                <TABLENAME>usage
                                <TABLETYPE>x_Power_usage
                                                <!--Power Inc format for usage-->
                                <ROW>
                                    <C>elec     <!--Consumable-->
                                    <C>19970228  <!--Date meter reading start of period->
```

```
                <C>65543         <!--Meter reading at start of period-->
                <C>19970328      <!--Date meter reading end of period-->
                <C>65643         <!--Meter reading at end of period-->
                <C>100           <!--Difference in meter readings-->
                <C>KWH           <!--Units-->
                <C>.8934         <!--Rate (price per unit)-->
                <C>89.34         <!--Charge-->
            </ROW>
            <ROW>
                <C>gas           <!--Consumable-->
                <C>19970226      <!--Date meter reading start of period->
                <C>509843        <!--Meter reading at start of period-->
                <C>19970327      <!--Date meter reading end of period-->
                <C>510843        <!--Meter reading at end of period-->
                <C>1000          <!--Difference in meter readings-->
                <C>Therms        <!--Units-->
                <C>.02543        <!--Rate (price per unit)-->
                <C>25.43         <!--Charge-->
            </ROW>
        </TABLE>
        <TABLE>
            <TABLENAME>charges
            <TABLETYPE>x-Power-charges
            <ROW>
                <C>75.34                     <!--Amount-->
                <C>Previous Balance 3/1/97   <!--Description-->
            </ROW>
            <ROW>
                <C>75.34
                <C>Payment Received 3/17/97 - Thank You!
            </ROW>
            <ROW>
                <C>0
                <C>Open Balance
            </ROW>
            <ROW>
                <C>114.77
                <C>Services, Subtotal
            </ROW>
            <ROW>
                <C>9.47
                <C>Taxes, 8.25%
            </ROW>
        </TABLE>
            </PRESDETAILRS>
        </PRESBILLINFO>
    </PRESLIST>
    </PRESLISTRS>
    </PRESLISTTRNRS>
    </PRESDLVMSGSRSV1>
</OFX>
```

15.8.4.3 Bill Delivery for a Group of Users

In this example, Realtors Company downloads the phone bills for the employees' office phones by asking the bill publisher to see the bills for the group RealtorsEmployees. The composition of the group RealtorsEmployees has been agreed upon between Realtors Company and the bill publisher; moreover, the bill publisher has agreed to grant Realtors Company access rights to the RealtorsEmployees group. All this took place outside of Open Financial Exchange.

15.8.4.3.1 Bill Delivery Request Example for a Group of Users

```
<OFX>
    <SIGNONMSGSRQV1>
        <SONRQ>
            <DTCLIENT>19970515100000
            <USERID>888-66-4444              <!--Realtors Company's user id -->
            <USERPASS>RealtorsPassword
            <LANGUAGE>ENG
            <APPID>CSRApp
            <APPVER>0500
        </SONRQ>
    </SIGNONMSGSRQV1>
    <PRESDLVMSGSRQV1>
        <PRESLISTTRNRQ>
            <TRNUID>34567
            <GROUPID>RealtorsEmployees    <!--Asks for Employee's phone bills-->
            <PRESLISTRQ>
                <BILLPUB> ABillPublisher
                <DTSTART>19970430          <!--since 4/30/1997-->
                <NOTIFYWILLING>N
                <INCLUDEDETAIL>Y
            </PRESLISTRQ>
        </PRESLISTTRNRQ>
    </PRESDLVMSGSRQV1>
</OFX>
```

15.8.4.3.2 Bill Delivery Response Example for a Group of Users

The response, not shown here, will include several bills each marked with its own <USERID>. The only bills returned will be the employees' phone bills for their office phones, since those bills are the only ones to which Realtor Company has access rights.

15.8.4.4 Group Account Information Example

This is an example of a client proxy system that is tracking changes to the accounts of a group of users.

15.8.4.4.1 Group Account Information Request Example

```
<OFX>
    <SIGNONMSGSRQV1>                       <!--Signon Request->
        <SONRQ>
            <DTCLIENT>19970307022243       <!--Timestamp, 3/07/97, 2:22:43am-->
            <USERID>AClientProxySystem
            <USERPASS>T23qdfw2             <!--Password of proxy system-->
            <LANGUAGE>ENG
            <APPID>OFXAPP
            <APPVER>0201
```

```
        </SONRQ>
    </SIGNONMSGSRQV1>
    <PRESACCTINFOMSGSRQV1>              <!--Group Account Info Request-->
        <PRESGRPACCTINFOTRNRQ>
            <TRNUID>10001
            <GROUPID>AClientProxysCustomers
                                         <!--Predefined group of customers-->
            <ACCTINFORQ>
                <DTACCTUP>19970104       <!--Last DTACCTUP received for group-->
            </ACCTINFORQ>
        </PRESGRPACCTINFOTRNRQ>
    </PRESACCTINFOMSGSRQV1>
</OFX>
```

15.8.4.4.2 Group Account Information Response Examples

```
<OFX>
    <SIGNONMSGSRSV1>                     <!--Signon Response->
        <SONRS>
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <DTSERVER>19970307081437     <!--Timestamp, 3/07/97, 8:14:37am-->
            <LANGUAGE>ENG
            <DTPROFUP>19970301070000     <!--Timestamp, 3/01/97, 7:00:00am-->
            <DTACCTUP>19970301070000     <!--Timestamp, 3/01/97, 7:00:00am-->
        </SONRS>
    </SIGNONMSGSRSV1>
    <PRESACCTINFOMSGSRSV1>               <!--Group Account Info Response-->
        <PRESGRPACCTINFOTRNRS>
            <TRNUID>10001
            <STATUS>
                <CODE>0
                <SEVERITY>INFO
            </STATUS>
            <ACCTINFORS>
                <DTACCTUP>19970122092431
                <PRESACCTINFO>
                    <PRESACCTFROM>
                        <BILLPUB>PUBLISHER, INC.
                        <BILLER>415-552-9923
                        <ACCTID>408-555-4342-M132
                        <USERID>bygeorge      <!--User from group with new status-->
                    </PRESACCTFROM>
                    <SVCSTATUS>ACTIVE
                </PRESACCTINFO>
            </PRESACCTINFORS>
            <PRESACCTINFORS>
                <DTACCTUP>19970123082423
                <PRESACCTINFO>
                    <PRESACCTFROM>
                        <BILLPUB>PUBLISHER, INC.
                        <BILLER>415-552-9923
                        <ACCTID>408-555-2341-U421
                        <USERID>132-42-5242    <!--User from group with new status-->
                    </PRESACCTFROM>
                    <SVCSTATUS>REJECTED
                    <REASON>ACCOUNT NOT FOUND <!--User supplied account with biller-->
                                              <!--didn't match biller's records-->
                </PRESACCTINFO>
            </PRESACCTINFORS>
        </PRESGRPACCTINFOTRNRS>
```

```
    </PRESACCTINFOMSGSRSV1>
</OFX>
```